

# Alberta Centre for Machine Intelligence and Robotics Proposed

A proposal to create the Alberta Centre for Machine Intelligence and Robotics is currently before Vice-President (Academic) Meekison.

A number of faculty members developed the proposal, the aim of which is to "initiate the organization and development of a research institute that would be a centre of

excellence dedicated to machine intelligence and robotics."

Wayne Davis, Computing Science, says that, initially, the group will work toward the establishment of the centre. The matter of funding would be left for another day.

The centre would be established at the University of Alberta, quite

likely in the Department of Psychology. The Alberta Microelectronic Centre and the Alberta Laser Institute would interact with the centre. Close liaison is planned with the proposed Centre for Integrated Manufacturing in the Department of Mechanical Engineering.

"Alberta's commitment to medical research, high technology and economic diversification could serve as a focal point for some of the research activities that would be associated with the centre," the proposal states.

Opportunities for various provincial institutions to participate will be incorporated in the structure.

The 16 individuals who drew up the proposal say the centre could:

- provide a focus for the various research activities in the areas of machine intelligence and robotics that are currently in progress at the University of Alberta.
- provide visibility and exposure to machine intelligence and robotics research on this campus.
- serve as a link for the technology transfer between basic research and practical applications by providing a service and/or doing contract work for industry.
- aid participating researchers and graduate students in the various Faculties in the establishment and maintenance of well-equipped laboratories.
- establish faculty positions, for example, chairs, in machine intelligence and robotics at the University of Alberta.
- support and increase the research interest of graduate students in machine intelligence and robotics.
- provide administrative and technical support for researchers so that their time can be more profitably spent on research and teaching.
- develop campus standards for image processing software, file formats and communication protocols.

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## FOLIO

University of Alberta

17 April 1986

### Engineering Students Win Fame, (Modest) Fortune in Honeywell Futurist Awards Competition

Back in the fall, Les Tanne and David Thomson casually detached entry forms from a poster advertising the third annual Honeywell Futurist Awards Competition. The demands of the present, however, kept the forms in the in-basket until the last minute. With the 31 December deadline advancing inexorably, and with a shot, albeit, they thought, a long one, at remuneration, ideas were set down in essay form and mailed to a panel of experts. The prevailing attitude was, "It's done. Great. If I win, fine." They didn't hold their breath until the outcome because the competition was open to all full-time Canadian college and university students.

Reading Week brought the news that Tanne was selected as a first prize winner and Thomson was selected as a second prize winner. In addition to their respective prizes of \$1,000 and \$500, they and the four other winners received a three-day, all-expenses paid trip to Toronto to attend the Futurist Awards dinner on 6 March.

Needless to say, Tanne and Thomson were happy that they worked far into the night to complete their 500- to 750-word essays (two on topics of their choice, for example, electronic communications, energy, artificial intelligence, office automation, and a third on the effects on society of the developments discussed in the other



Les Tanne (left) and David Thomson enjoyed their fling as essayists.

two essays). The destination was the year 2010; the criteria were: creativity (40 points), feasibility (40 points) and clarity of expression (20 points).

In Tanne's essay, "Global Telecommunications", a Canadian Energy Minister negotiates with the Premier of Kiangsi via a satellite link which simultaneously translates the speech of each to the language of the other.

This technology, together with a need for energy, results in a new cooperation among nations. Hydrocarbon fuels are no longer burned. Fusion reactors and high energy beams from microwave

satellites contribute strongly to national energy grids. Computers for energy management are no longer the sole province of large organizations, but are prevalent in every household.

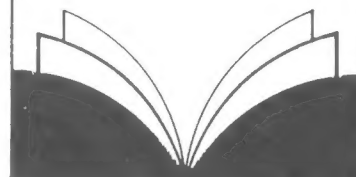
On-going, direct talks between statesmen using the new translators has reduced the threat of war. All is not well, though. There is little incentive to learn foreign languages and a new insularity rears its head. The cessation of the world's major industries, oil and petroleum-powered vehicles, has brought about a huge change in commerce, though no one misses the pollution that has been left behind.

Tanne will put his first prize money toward a December trip to Japan to visit his brother; Thompson, a computer if not a financial wizard, had some bills to pay and the \$500 is now history. He's not complaining though. An interest in working for Honeywell Ltd. has been with him for some time and he was able to spend much of the three days in Toronto in interview sessions. As *Folio* was going to press, he was anticipating hearing from the firm's personnel office. If the news is favorable he will be a graduate student no longer and Computing Services will lose a part-time MTS consultant. This is a man who never met a computer he didn't like. All his writing is done at a VDT and, should he move east

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## McCalla Professorships Awarded Ellyin, Forrest

Fernand Ellyin, Mechanical Engineering, will devote much of his 1986-87 McCalla Professorship to the consolidation and advancement of some of his work in the fields of fatigue and fracture mechanics. In particular, Dr. Ellyin would like to "accelerate the completion of the unique low temperature and corrosive environment multiaxial fatigue testing facility." He would also like to start writing a monograph on the multiaxial fatigue failure.

According to Dr. Ellyin, the objective of the research now in progress is, in the first instance, to develop models to predict material response under multiaxial states of stress and varying environments. "The approach is a hybrid one involving experimental and analytical works in order to describe the multiaxial low cycle fatigue, nonlinear fracture, and in elastic response phenomena," he says.

The second aim is to use these material models to develop techniques to predict the reliability of components and systems under different sets of circumstances. The resulting design tool to be

developed will enable one to arrive at target safety levels and inspection intervals to prevent premature failures and efficient designs.

Dr. Ellyin received his undergraduate and master's degrees from the University of Tehran and his PhD from the University of Waterloo. He joined the University in 1981 following appointments at Université de Sherbrooke, Carleton University, Waterloo, and Oxford. His experience in industry includes consulting assignments with such companies as the Atomic Energy Control Board, Syncrude, and Oak Ridge National Laboratory.

Dr. Ellyin has more than 80 publications to his credit and is a member of numerous associations, including the Canadian and American Societies of Mechanical and Civil Engineers, and the Order of Engineers of Quebec.

### A Scholar's Progress: Forrest on Bunyan

Those in the know say that Jim Forrest is "indisputably one of the top three Bunyan authorities in the world", so it is not surprising that

Dr. Forrest's project during his McCalla Professorship will be the preparation of a book on John Bunyan.

Dr. Forrest is undertaking a major study of Bunyan, embracing all his 60 works, a history of their critical reception and an appreciation of them in the light of modern scholarship. The book has already been commissioned by Macmillan (London) for its "Literary Companion" series, with the hope that it will be published in 1988 as part of the commemoration of the tercentenary of Bunyan's death.

"Bunyan is a cultural phenomenon," says Dr. Forrest. "An unlettered Bedford tinker, he was also a preacher, allegorist, Christian humanist, and a radical. His appeal goes beyond the boundaries of theology, history, psychology and letters. My project, inter-disciplinary as it is, will see Bunyan whole."

In his own day, Bunyan was widely popular but his acceptance by the intelligentsia was longer in coming. It was over the next three centuries that his reputation grew — but as a literary artist, rather than as a practical theologian.

Now the unlettered Bedford tinker has become the darling of the universities," Dr. Forrest says. Bunyan's work currently figures prominently in the speculations of leading modern critics, who have found in the distinctive character of Bunyan's religious writing a crucible to test their notions not only about

the "affective" nature of literary art, but also about the reader's involvement in the reading process, and the demands made on the reader's own imaginative resources. In the last 30 years, 50 or so doctoral theses have been written on Bunyan's work, and the flow of scholarly books and articles continues unabated.

The final stamp on Bunyan as a literary artist of the first rank was the appearance of the collected edition of his works, the Oxford (Clarendon) Bunyan, of which Dr. Forrest is an associate editor.

With two degrees from the University of Glasgow and a doctorate from Cornell, Dr. Forrest joined the English Department in 1960 as assistant professor, and was appointed professor in 1970. In 1983, he received the Rutherford Award for Excellence in Teaching, and he has received grants from bodies such as the Canada Council and the Humanities and Social Sciences Research Council of Canada.

The author of numerous scholarly and critical books and publications, Dr. Forrest has also published poems, stories and sketches and has written two plays, one of them a dramatized version of *The Pilgrim's Progress*. At the same time, he has carried a full share of administrative burdens, over the years sitting on or more departmental, Faculty and University committees. □

## How Not to Have Technophobia is Subject of Conference

A highlight of the conference, "Confronting Technophobia", will be a public lecture on the Friday evening by Jay Ingram, host of the prize-winning CBC radio science program, "Quirks and Quarks".

This conference will take place Friday and Saturday, 9 and 10 May.

The theme of the first day is "Career Choices", with a program designed especially for young women, to encourage them to consider careers in the sciences and engineering. Topics include "Girls and Technophobia: Prevention, Diagnosis and Cure" and "Experiences and Expectations: Differences Between Boys and Girls".

Molly Stock, Professor of Forestry at the University of Idaho, and Sheila Wynn of the Alberta Women's Secretariat are among the speakers.

At small group sessions, participants will be able to meet women scientists, engineers and technologists, hear what they do, and ask them questions. There will also be panel discussions on "Technophobia: Impacts on Career Choices", "Looking Ahead: Broadening our Vision of Science", and "The Joy of Science".

This day's program was planned by WISEST (the University of

Alberta Committee on Women in Scholarship, Engineering, Science and Technology).

On 10 May, there will be eight sessions, four concurrently in the morning and four concurrently in the afternoon. The difficulty then will be to make your choice from the great variety of topics to be addressed, from "Traditional versus Modern Medicine" (David Young) to "Artificial Intelligence" (Renee Elio), and including "Lasers: Death Rays or Life Rays" (Al Offenberger) and "PCBs: Chemistry, History, Toxicity" (Walter Harris), to mention only some.

Speaker at the morning plenary session will be Robert Burch, Professor of Philosophy. Jay Ingram will address the afternoon session.

The Saturday program has been designed by AASC (the Association for the Advancement of Science in Canada), and the conference was jointly organized by AASC and WISEST, with assistance from Edmonton Public Schools.

The registration fee of \$10 includes all sessions and lunch on Saturday. Accommodation is available on campus at Lister Hall. Pre-registration deadline is 25 April. Call M.A. Armour, 432-5566, for further information about any aspect of the conference. □

## PACSH Vacancies

The President's Advisory Committee on Sexual Harassment (PACSH) has vacancies for two female non-academic staff members. One candidate is needed to serve as a regular member of PACSH for a term of office beginning 1 May 1986 and expiring 30 June 1988. Another candidate is needed to serve as an alternate member of PACSH from 1 July 1986 to 30 June 1988.

There is also one vacancy for a male non-academic staff member to serve as a regular member of PACSH from 1 July 1986 to 30 June 1987.

All PACSH members, both regular and alternate, assist with the educational campaign, may serve on the panels which assess and investigate sexual harassment cases, and may be called upon to advise members of the University community who have problems involving sexual harassment. In addition to these responsibilities, regular members of PACSH also attend approximately ten committee meetings each year. A training session is organized to orient all new PACSH members.

If you are interested in serving on this committee, or if you would like to submit a nomination, please write to Mrs. E.A. Solomon, Coordinator of the Committee, 2-5 University Hall, by **28 April 1986**. It would be appreciated if a brief *vita* could accompany each nomination.

## Robot That Really Sees

Terry Caelli, a psychologist working on robot vision, has designed a robot with much greater abilities than usual. His seeing-eye robot can make arbitrary choices: it can focus on any object, memorize it, then find it for and locate a similar object in its place else in its environment. This is a great advance.

Usually, robots can't think. Although they may appear to perform routine mechanical tasks as though they are alive, they have simply been pre-programmed to do a job. Even robots that appear to "see" have been pre-programmed, and can only focus on limited, selected targets.

For some time, Caelli has been studying visual perception in humans, using mathematical techniques. Now he is applying his knowledge to developing a vision system for robots. And he is the first person to have developed a really useful method of image detection for robot vision.

The human eye recognises what it is looking at by detecting the outline, or edge. Caelli calls this "extracting edge information", and the unique, mathematically-based vision system he has developed for his robot works in the same way. His robot is able to look at an object, extract information about its edge or outline, and retain and store this, as a kind of master pattern against which other visual signals can be tested for match.

His equipment consists of a common mini-computer-based image processing system, interfaced with a video camera and an RB-robot. Slightly less than a meter high, the robot looks much like R2 D2, except for the video camera that replaces the usual headpiece. It stands in the middle of a circular pen, 3 meters across, wires and cables attaching it to computers and screens outside the pen walls. It can move in any direction and has a three-joint arm that operates as processed information commands it.

A number of different pictures are taped to the inner side of the pen walls, and a second copy of each picture is taped at a point far removed from the first one.

The robot's task is to focus on a selected picture or symbol on the wall, extract and retain edge-only information, then find, move towards and point at the identical picture or symbol taped elsewhere on the wall. Able to move to the left or the right, it can search the wall section by section. If it finds no match in a section, it will move round and search the next one. If it finds a pattern that appears to match to some degree the previously extracted edge information pattern, it can move forward from the centre of the circle, closer to the area it is searching, and take a closer look at what it sees there. If there are discrepancies, it will simply move back, then search the next area. If, however, the match is exact, and the duplicate of the first image has indeed been located, it will raise its three-jointed arm and point at what it has found.

At present, Caelli is concerned only with two-dimensional pattern recognition and pattern matching. Going to three dimensions will be difficult, he says, but the possibilities are tremendous for detecting signals on the production line and the conveyor belt, for working in hazardous environments and for processing medical images.

Indeed, there is already a greenhouse-tomato grower who would much like to have robots such as these to pick his expensive crop. Unlike the average human picker, having once been told what size tomato to choose, a robot would never make the human error of harvesting undersize fruits. □

*This article is reprinted from the January/February 1986 edition of Research Report.*

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● establish avenues of communication (seminars, newsletters, etc.) for on-campus communication among the various research groups.

Visibility at the national level is important, the proposal says. Currently, McGill, Toronto and the University of British Columbia are "research nodes" in the machine intelligence and robotics fields. Their designation by the Canadian Institute for Advanced Research "has a significant influence on both funding decisions and faculty

recruitment." The proposal says that a formal, visible structure is essential if the University of Alberta is to halt the brain-drain to Canadian and foreign universities.

Activities of the centre would be in such categories as language and inference, image processing, expert systems, and robotics, including intelligent robotics. Artificial intelligence, or machine intelligence is viewed as an important tool in modern society, a tool having considerable application in a number of different areas, for example, the analysis and use of medical images, the utilization of

### Awards Continued from page one

and not have ready access to one, the science fiction novel he's working on will have to be shelved. He steadfastly refuses to use a typewriter.

Thomson, who grew up in Athabasca, seems to be one of those students who put a lot into University life and got a lot back in return. For example, from his home in Garneau, he and a crack corps of engineers worked tirelessly to turn out 1985's Stay Puffed Marshmallow Man, that benign poobah of Engineering Week. Remember the sword that slashed through the Civil-Electrical Engineering Building this winter? Yes, Thomson was the stunt coordinator.

His essay, titled "So What Else is New?" tells of physicists' discovery of antimass, a breakthrough that man exploits to defy gravity and provide a new source of energy. In spite of this, the unification theory continues to be elusive . . . Later, a super-computer called NAC becomes aware of its own intellectual processes. Scientists then steer it toward self-directed learning and a philosophical outlook.

Politicians step in and tax the antimass industry so heavily that only the sons of rich men can afford to become the casualties of the flying harness fad. And an old man in the Golden Trees Resting Home, forsaken by his family, is befriended by the dependable NAC computer.

Tanne, a second-year Electrical Engineering student, is weighing a summer job offer that would take him to Fort Chipewyan and High Level. He would maintain and install microwave landing systems. It would be a change from the academic life which places him in class at 8 a.m. and then, following a quick lunch, in the Library until 5 p.m. After supper at his apartment near campus, he returns to the Library for a few more hours of study. It's all necessitated by three-hour labs at which 15- to 20-page

abstracts are assigned for the next sessions.

Tanne's classes this semester have been on circuit analysis, numerical analysis, differential equations, calculus, physics, and sociology. The latter course is becoming more prevalent in engineering programs because, in addition to knowing a particular system inside out, engineers are finding that they need communications skills and the ability to practise the art of diplomacy if they are to implement those systems effectively.

Tanne's parents, who live in Lethbridge, attended the University of Alberta (both are teachers), as did his brother. Les plans to finish the electrical engineering program in two more years and then put his skills to work. He hasn't ruled out going on to a more specialized program of study but says it won't happen until he's spent some time working in the field. □

## 'Decanting' Update

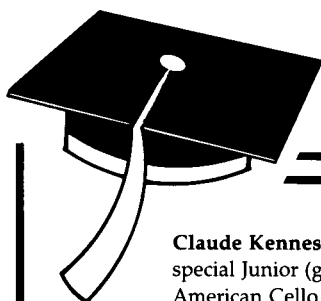
Following the *Folio* article on the 'decanting' of the Arts Building, queries about the Native Justice Institute and graduate student study space in the Humanities Centre were posed.

The Native Justice Institute is located in the Faculty of Law and should be fully operational by September. According to the Faculty's Jim Robb, the Institute was created to help bands in the province set up their own tribal justice system. Professor Robb, who has been adviser to the tribal justice centre at the Saddle Lake Reserve for two years, points out that many bands have their own traditional laws and tribal systems.

The Institute will work with the individual bands to establish a justice system suitable to their needs and customs.

Graduate student study space on the second level of the Humanities Centre will not be available, however, study space will exist at the 88 Avenue and 111 Street site. The Office of Planning and Development is exploring the possibility of relocating some of this space in Humanities.

There was also some confusion surrounding the removal of trailers once the renovations are completed. Only the trailers on the Algonquin Apartments site will be removed; those to be situated where the greenhouses are now will remain for a period of time. It should be noted that although much of the greenhouses will be torn down, funding for new greenhouses has been requested. They would be located at the University Farm. □



## Activities

**Claude Kenneson** will conduct a master class for the special Junior (grades 8 to 12) Congress at the Third American Cello Congress, 3 to 7 June. More than 500 cellists from throughout the United States and from several other countries will attend the congress on the Indiana University campus . . . **Ellen Picard**, Law, gave the Willis Cunningham Memorial Lecture at Queen's University on 20 March. While in Kingston, Professor Picard also participated in a seminar on "Ethical and Legal Considerations in the Practice of Medicine in the Nineties" . . . The Director of Statistics Canada's Demography Division, **Anatole Romaniuc**, was Distinguished Visiting Professor in the Department of Sociology for the month of March . . . **L.A. Kosiński** participated in a series of presentations by Canadian and French scholars on geography of Canada. "La Géographie du Canada" was organized by the Canadian Cultural Centre in Paris and sponsored by the Department of External Affairs. The proceedings will be published in France . . . **Duncan Fishwick** this week gave an invited lecture at the Institut d'Art et d'Archéologie (Sorbonne) and the Palais du Louvre (Société des Antiquaires de France). The title of his address was "L'autel des Trois Gaules. Le témoignage des monnaies" . . . **Robert Elliott** was Distinguished Lecturer at the University of Maryland in February. He was visiting the Systems Research Center which was recently awarded a \$16 million grant by the National Science Foundation.

## Writing Competence Petitions

Notice to students who have not met the University's writing competence requirements and whose deadline for meeting those requirements is April 30, May 1, July 1 or September 1, 1986: If you plan to enrol in Summer session 1986 or in Fall session 1986 and you have not yet passed the writing competence test, you may petition the GFC Writing Competence Petition Committee for permission to continue your registration. **The petition must be made in time to continue your registration in the term immediately following your deadline.**

If you wish to petition in order to enrol in Summer session, you **must** petition by May 5, 1986. If you wish to petition in order to enrol in the Fall 1986 session, you **must** petition by May 5 or August 1.\*

Students who do not petition at the stated times will only be permitted to register by passing the writing competence test.

**Registrations of students who do not successfully petition or pass the writing competence test will be cancelled prior to the start of classes.**

Advice on preparing and submitting petitions can be sought from the Student Ombudsmen, Room 272 Students' Union Building, or the Student Advisors in the Office of the Dean of Student Services, Room 300 Athabasca Hall. The regulations and procedures used by the GFC Writing Competence Petition Committee are available in either of these offices.

\*Students granted a hearing by the GFC Writing Competence Petition Committee will have their cases heard either May 20 to 23, 1986 or August 11 to 15, 1986.

## Drama Department Schedules Summer Program

DRAMAWORKS is a summer drama program that offers both credit and non-credit courses.

Co-sponsored by the Department of Drama and Alberta Culture, in association with the Theatre and Drama Association of Alberta, the program consists of courses, and seminars with special speakers, designed for community theatre practitioners, drama and theatre students, and drama educators.

The two credit courses are "Improvitational Workshop Drama" and "Introduction to Stagecraft and Design". There are seven non-credit courses, ranging from "Directing the One-Act Festival Play" through "Make-Up: The Art of Making

Faces" to "Prop Making and Painting". Among the subjects for special seminars are "Volunteer Management" and "Board Development".

DRAMAWORKS (which is the adult portion of Artstrek) will enable the theatrically inclined to explore a particular area of study. Additionally, free, noon-hour seminars will further enrich the experience.

Courses will be held 7 to 25 July, and enrolment is limited. For credit courses, registration deadline is 1 May. Call Carl Hare, Drama, 432-2271. For non-credit courses, deadline is 16 May. Call Mary Gynane-Willis, Alberta Culture, 427-2563. □

## Proposed Amendments to the Code of Student Behaviour

### Present:

### Proposed

#### s. 43.10 Definitions

(a) - (h)

Unchanged

#### Add

##### (i) Dean

Unless indicated otherwise, "Dean" shall be interpreted as the Dean (or designate) of the Faculty which offers the course in which there is all allegation of academic wrongdoing on the part of a student.

##### (j) Director of Campus Security

Director of Campus Security or designate.

#### s. 43.11.(1)(d)

The Director of Campus Security or designate may decline to lodge a complaint with the Discipline Officer under the following circumstances.

(i - v)

Unchanged

**Add** a sub-item to be numbered 43.11.(1)(d)(v)(i) as follows: The Director of Campus Security (or designate) shall normally proceed with internal charges under this Code even though charges have been or may be laid in criminal court for the same incident.

#### s. 43.11.(1)(d)(v) paragraph 2.

Where the Director of Campus Security (or designate) has declined to lodge a complaint the complainant must be so notified and the reasons given. The person complaining may then appeal the Director of Campus Security's (designate's) decision to the Dean of Student Services.

Number this paragraph s.43.11.(1)(d)(v)(ii).m11

These amendments will be considered at a forthcoming GFC meeting

## Universities and Disciplines

by Jeffrey Osborn, Department of Oral Biology

“I know that the old tend to ‘mourn the days that are past’ while the young have a jaunty optimism with their ‘ever a spring her primrose hath and ever a May her may’”. But allow me to state, old as I am, that university standards have declined since I was young and they are still declining. Being at present in full possession of my faculties I recognize I must find data, somewhere, to support my contention. It is useless to compare marks, grades and standards awarded then and now. The present professors may be more tolerant markers or set lower standards. And it is here that I will make my case. Nowadays universities require far lower standards for the once coveted degrees they confer.

To justify my position I shall look at the requirements for different degrees. Consider the following long list and decide which are appropriate for a university degree: aerodynamics, anatomy, anthropology, biochemistry, carpentry, chess, cooking, dentistry, gardening, literature, mathematics, managing farms, managing hotels, medicine, movies, nursing, plumbing, philology, physics, reading, recreation, speech therapy, spelling, teaching, typing, welding and zoology. Underline your choice, thinking in terms such as BA Spelling (U of A), and now ask yourself what criteria dictated your selection.

You may think that in several cases you did not know enough to make a choice and you may have taken the view that any area of study is worth a degree (in which case the argument is ended — if standards are now absent they must have declined). It is more likely that you excluded amongst others, carpentry, chess, cooking, gardening, plumbing, spelling and typing. If you did make a choice like this it was probably because there just didn't seem to be enough in them. I shall argue that for these same reasons you should have excluded about 2/3 of that long list. And it is because these other areas of study are now awarded degrees and doctorates that I know the standards of universities have declined.

I have stated elsewhere my belief that university degrees should only be awarded for studies in university disciplines. Like many others, I believe that a (university) discipline is worth a degree it must also, by research in the same area, be worth a doctorate. Bearing this in mind I have attempted to analyse my view of a university discipline. Like a degree and PhD it is in two parts.

1. It contains a discrete body of factual knowledge worthy of study for its own sake without practical application and whose size and intellectual content is sufficient to tax a hypothetical “good adult mind” for two years at least, but three or four at least would be more acceptable.

2. The present absence of sufficient facts render the area open to new interpretations, analyses, evaluation and synthesis, all of which generate opinions, new ideas and controversies that should be capable of solution by further research.

The least satisfactory part of this analysis is the inclusion of the vague and undefined “worthy of study” and a “good adult mind”. A moment's thought will reveal their necessity and the problems in defining them. Elementary algebra is worth studying and is a challenge to good nine-year-old minds and to many adult minds but is not worth a degree. To count the number of different colored needles in a pine forest would challenge any mind but it is not worth the study.

Before going any further you should try to analyse how you would modify my analysis. I know it's imperfect — but make your own alterations without knowing where your analysis might lead you.

I admit that subjects suitable for university disciplines change with time. In the Middle Ages the liberal arts consisted of the trivium (rhetoric, logic and grammar) and the quadrivium (arithmetic, music, geometry and astronomy). Only two or three remain in universities because for the others the core of factual knowledge is virtually complete and there is little room for further opinion, controversy and research.

Many subjects suitable for a PhD are probably not suitable at a particular time for a degree because they do not contain a large enough core of their own factual knowledge. Aerodynamics, biochemistry and zoology are examples. Sixty years ago not enough was known about each and their study initially involved a degree in a richer discipline. But now each has achieved such a large core of factual knowledge, opening up so many areas for research, that they are obviously university disciplines. It is interesting to note that for university disciplines a PhD is (often or

always ?) present before the degree becomes acceptable.

You probably excluded typing and spelling. Both can be a challenge to adult minds but they each suffer from a lack of sufficient factual knowledge. Furthermore, how are we justified in awarding them a PhD, one of the requirements for a university discipline? The mechanics and history of typewriters, the design of fonts, the art of layouts, the manufacture of paper, computer-related studies of word processing, the sociology of typists, their psychological problems and some elementary ethics might warrant several courses included in a BA Typing. It will sound more respectable if we call it a BA or a PhD in Secretarial Sciences. But it is all too thin and contrived. The essence of typing is its practice and that is just not worth a degree, let alone a PhD. Perhaps I have inadvertently given someone an idea? After all, there is a market demand for typists and many students and university staff believe the university should offer degrees in areas where there is a market demand.

Chess lacks a sufficient body of factual knowledge. The only facts are the rules of the game. The rest is analysis of a myriad of different possibilities with the single objective of achieving a check mate; a challenge indeed, but not a university discipline.

Carpentry (including cabinet making) is a real challenge and could include a large body of factual knowledge relating to history (arts), wood science (botany), adhesives (chemistry), varieties of tool (metallurgy and engineering) and design (arts) amongst others. We could also include the inevitable courses in the sociology and psychology of carpenters (separate courses, naturally) and the course with an ethics component.

Those attracted to study a BSc Carpentry would not be amongst the intellectual elite. They want to practise carpentry not study it. We would therefore be forced to reduce our standards. This can be achieved by instituting courses such as History 261, Botany 342, Chemistry 364, Engineering 412 (elective) and so on with the proviso in the University Calendar that these courses are restricted to students from our Faculty of Carpentry. This will shelter them from intellectual studies at a level that would be too demanding for those whose only real horizon and interest is to practise carpentry.

Notice now what has happened to the university disciplines whose incorporation into our carpentry degree originally gave it the respectability that probably made it acceptable (to some) for a degree. All these disciplines can be taught at a level that would not challenge a 16-year-old but, because carpenters study botany, chemistry, ethics, sociology, psychology, management, engineering, metallurgy and so on, the public see it as a course of study worthy of a degree.

Why did carpenters want a degree instead of merely a training, particularly when their main interest is in practising carpentry? The reason is employers are forced to pay more if the carpenter has a degree. The market demand for the degree was generated by society and the university was duped.

Carpentry fails to meet my requirements of a university discipline. The heart of the matter is that degrees used to train people for a job attract only those whose main interest is practising the job itself, not those looking for the intellectual challenge which is the real business of universities. The university is forced to pervert its intellectual standards and debase the value of its degrees by setting up courses in university disciplines that are sufficiently elementary for the trainees to be able to pass them.

It is also true for university disciplines that the longer you study them the more difficult they become. By limiting the number of courses within a particular discipline to one or two it is usually certain that the courses will be elementary because you are at the beginning of the discipline. This takes one into General Degrees but suffice it to say that the standard of a university degree is directly related to the number of courses taken within a single discipline. The more disciplines that have been studied, the more inferior is the standard of the degree. I find it incredible to hear some argue that the more disciplines they have studied (isolated elementary courses) the more they can claim to be cultured! How do they define culture?

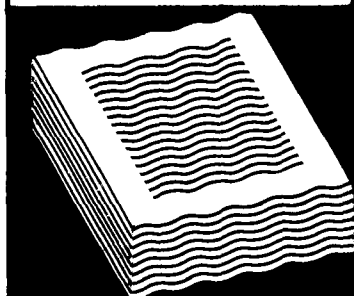
Return to the list again and seek out those that are primarily training programs. And now try to convince me that university standards have not declined.

If we want to prevent a further decline in university standards, and to improve them, we must return to the system of 50 years ago and give back to technical colleges and similar institutions the training programs now settled in the universities.

“Sweet as the rose that died last year is the rose that is born today”. Maybe — but you will not get my vote for universities. □



# Currents



## Canada Employment Centre Wants to Hear From Grads

The Canada Employment Centre on campus anticipates offering several "Job Finding Club" sessions this summer. Those 1986 University of Alberta graduates needing assistance finding a permanent career-related job and who can afford to make a two-week commitment are invited to leave their names and telephone numbers at the Centre, 4th floor Students' Union Building.

## Faculty Women's Club Meeting

On 30 April, at 7 p.m., the University of Alberta Faculty Women's Club will hold its annual meeting and banquet at the Derrick Club. Father Lucien Larre, founder of the BOSCO Homes for Teenagers in Calgary and Regina, will be the guest speaker. For tickets or information, call Libby Smith, 434-2661, or Helen Neufeld, 436-0571.

## Supportive Coffee

Coffee in support of "The Committee of Christian Mothers and Relatives of the Detained, the Disappeared and the Assassinated" of El Salvador.

Latin American and Canadian music and food.

Friday, 25 April, 8 p.m. St. Joseph's College Basement. Tickets: \$4. 431-1781.

## Oral Interpreting Workshop

A workshop on oral interpreting will be held on campus 26 to 28 May. The workshop is being sponsored by the Western Canadian Centre of Specialization in Deafness and the Alberta Chapter of the Registry of Interpreters for the Deaf.

The presenter will be Suzanne Cloutier of Toronto, the first Canadian to become a certified oral interpreter.

The workshop is designed for those wishing to work with oral hard of hearing and deaf persons. The fee is \$30; enrolment is limited to 15 people.

Registration forms are available from the Office of the Dean of Student Services, 300 Athabasca Hall, Edmonton, Alberta T6G 2E8.

## O'Neill Elected Non-Academic Observer

Brendon O'Neill, a member of the Office of Planning and Development, and a 20-year employee of the University, has been elected to a three-year term on the Board of Governors, effective 14 April 1986. □

page six, Folio, 17 April 1986

## Talks

### Medicine

18 April, noon. R. Huhlewych, "Focal Microcirculatory Changes at the Site of Aspirin-Induced Gastric Ulceration." SMRI Conference Room.

19 April, 8 a.m. S. Gonsales and J.B. Metcalfe, "Investigation and Management of Renal Masses in Children." 5H202 Mackenzie Health Sciences Centre.

### Pharmacy and Pharmaceutical Sciences

21 April, 3 p.m. R. Venkataramanan, Assistant Professor, School of Pharmacy, University of Pittsburgh, "Drug Absorption and Disposition in Liver Transplant Patients." Classroom D, Mackenzie Health Sciences Centre.

### Rehabilitation Medicine

21 April, 4 p.m. Steve Dennis, Vice-President of Research, Western Industrial Research and Training Centre, "Orientation to the Research Division at Western Industrial Research and Training Centre." 203 Corbett Hall.

### Nephrology/Immunology

22 April, 12:30 p.m. R. Venkataramanan, "Cyclosporin Monitoring in Organ Transplant Patients." Classroom D, Mackenzie Health Sciences Centre.

### Centre for Systems Research and Computing Services

24 April, 10 a.m. and 2 p.m. Karl Joreskog, University of Uppsala, "Recent Developments in Structural Equation Modelling (LISREL)." Included in the afternoon lecture will be a demonstration of two computer programs, LISREL and PRELIS. L-3 Humanities Centre.

### Forest Science

24 April, 4 p.m. Michael T. Clegg, Department of Botany and Plant Sciences, University of California, Riverside, "Processes of Plant Molecular Evolution." M-149 Biological Sciences Centre.

25 April, 10 a.m. Dr. Clegg, "Genetic Transmission in Populations of Morning Glory." G-217 Biological Sciences Centre.

### Anatomy

2 May, noon. D.L. Brown, Chairman of the Executive Committee of the Fourth International Conference of Cell Biology, "Reorganization of the Lymphocyte Cytoskeleton During Mitogenic Stimulation." 6-28 Medical Sciences Building.

## The Arts

### Ring House Gallery

Until 20 April. "A Record for Time"—an exhibition of decorated family and individual records, memorials, tokens of friendship and embroidered memorials and samplers produced in Nova Scotia prior to 1900.

### Bruce Peel Special Collections

Until 30 April. "From Impressionism to Surrealism"—European artists as represented in coffee table books and catalogues raisonnés.

Until 30 April. "Sketches in the

Canadas"—23 hand-colored lithographic plates, sumptuously produced by Coke Smyth in 1842. This rare portfolio is the most sought after volume of plates published on Canada. B-7 Rutherford South.

### Courtyard Concert Series

All concerts are held on the Fourth Level East Atrium, Mackenzie Health Sciences Centre.

18 April, noon. Alice Weitzel, vocalist.

24 April, noon. Evan and Sharon Verchomin, viola/cello.

1 May, noon. Klaver—cello, Buick—piano and Scott—violin. (Last concert of the series. New season starts in the fall.)

### Music

All events take place in Convocation Hall.

18 April, 8 p.m. Senior Student Recital—Sandra Butner, flute.

23 April, 8 p.m. Faculty Recital—Kay McCallister, horn.

24 April, 8 p.m. Sandra Babbel, soprano—candidate for the MMus degree in Applied Music (Voice).

26 April, 8 p.m. University of Alberta Concert Choir Tour Choir Gala Concert—Leonard Ratzlaff, conductor. Tickets: \$10.

### SUB Theatre

20 April, 2 and 5 p.m. Big Brothers present a Children's Musical Revue. 423-6807.

23 April, 8 p.m. "The Philip Glass Ensemble." 432-4764. Jubilee Auditorium.

25 April, 2 p.m. University Hospital School of Nursing Graduation. By invitation only. 432-6728.

27 April, 12:30 p.m. Castle Downs School

of Dancing—Solo Performance." Iris Gittens, 481-6072.

29 April, 1:30 p.m. Ballet North—Edmonton's young people's performance company. 434-1129.

### Edmonton Film Society

28 April, 8 p.m. Great British Films—"Room at the Top" (1958).

### Théâtre Français d'Edmonton

29 April to 4 May. "Albertine, En Cin. Temps." Ana Power, 469-0829. Rice Theatre, Citadel.

### Broadcasts

#### Radio

CKUA radio 580 AM and 94.9 FM. 12 April, 7 p.m. "University Concert Hall."

19 April, 7 p.m. "University Concert Hall."

### Surplus Equipment

The equipment appearing in this column is available only to University departments with University-administered funds. For more information, telephone Jody Brookwell or Roy Bennett, 432-3208.

For Sale: McClary Refrigerator Hudson Wong, Art Store, 432-3881.

Miscellaneous surplus equipment in 26 April auction. Watch for details. For more information, contact Jody Brookwell, Surplus Sales Coordinator, at 432-5393.

# FOLIO

Volume Twenty-two  
Number Thirty-four

Office of Public Affairs  
423 Athabasca Hall  
University of Alberta  
Edmonton, Alberta T6G 2E8  
(403) 432-2325.

All enquiries and  
correspondence should be  
directed to:  
Ron Thomas  
Editor

Public Affairs produces Folio  
on a regular basis for the  
staff and other interested  
persons.

#### Deadlines:

Notices of coming events: 9 a.m. three weeks in advance of desired publication date.  
Classified advertisements: 3 p.m. one week in advance of desired publication date. This date also serves as the deadline for cancellation of advertisements.  
Advertisements cost 30 cents per word with no discount for subsequent insertions. There is a maximum limit of 30 words and a minimum charge of \$1.50. Contributors' corrections will be assessed at \$1.50 for each line in which an insertion is made.  
Advertisements cannot be accepted over the telephone. All advertisements must be paid for in full at the time of their submission.  
Display advertisements: 3 p.m. one week in advance of desired publication date. Contact Public Affairs for sizes, rates and other particulars.

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## Positions

*The University of Alberta is committed to the principle of equal opportunity in employment and encourages applications from all qualified people.*

*In accordance with Canadian Immigration requirements, these advertisements are directed to Canadian citizens and permanent residents.*

## Academic

### Director, Division of Support Services, Faculty of Physical Education and Recreation

Nominations and applications are invited for the position of Director of the Division of Support Services. The successful candidate will be appointed with an academic position (Administrative Professional Officer) and a salary commensurate with qualifications and experience. The position will be available 1 July 1986. Applications will be considered until 15 May 1986.

Reporting to the Dean of the Faculty, the Director is accountable for planning, developing and operating an efficient support service for all users of the Van Vliet Centre and auxiliary facilities. The Director is accountable for budget preparation and control; equipment maintenance and control; personnel training and supervision; facility scheduling; rental contract preparation; audio-visual centre management and liaison with other related University units.

In addition to sending an application and curriculum vitae, applicants should arrange for three letters of reference sent to: R.G. Glassford, Dean, Faculty of Physical Education and Recreation, University of Alberta, Edmonton, Alberta T6G 2H9.

Deadline for applications: 1 May 1986.

### Laboratory Director, Department of Computing Science

Applications are invited for a Faculty Service Officer (a full-time academic position) as Laboratory Director, Department of Computing Science. Responsibilities include the planning and supervision of instructional laboratories and the promotion of innovations in instructional methodology. Candidates should have considerable relevant academic experience: curriculum planning, teaching experience, course development and supervisory experience. An MSc is mandatory and a PhD in Computing Science is preferred. Salary will be commensurate with qualifications and experience; current salary floor is \$38,170.

Departmental instructional laboratory facilities currently include four time-sharing terminal labs connected to the University's Amdahl 5860 mainframe computer, three MacIntosh PC Labs operated stand-alone or connected to the mainframe, a logic lab, and a microcomputer lab. AVAX 11/780 is largely devoted to several undergraduate courses, running under a UNIX operating system.

Applications, including a detailed resume and the names of three academic references, should be submitted to: Lee J. White, Chairman, Department of Computing Science, University of Alberta, Edmonton, Alberta T6G 2H1.

### Director, Division of Neurosciences, Faculty of Medicine

The Dean of the Faculty of Medicine is seeking to appoint a Director of the Division of Neurosciences. This Division will include members from various departments in the Faculty of Medicine and also members from other Faculties on campus who will have a variety of clinical and basic science interests and backgrounds.

The Director will be responsible for the administration of this new Division, including recommending the appointment of its various members; the organization and coordination of teaching programs at an undergraduate and post-graduate level; the organization of meetings, rounds and seminars; the support and development of research activities among members of the Division and others. These activities will be carried out in consultation with departmental representatives where appropriate.

The Director will be responsible to the Dean of the Faculty of Medicine in regard to divisional matters, and will interact with the various department chairmen in regard to matters relating to individuals within the Division.

The Dean has appointed a Search and Selection Committee to advise him on the appointment. Any Faculty members who may be interested in the position of Director, or who may wish to nominate colleagues for this position (with their consent), should make their wishes known in writing to Dr. A.B. Jones, Associate Dean (Faculty Affairs), Faculty of Medicine, 2J2.00 Mackenzie Health Sciences Centre, 432-6621. Please include a full curriculum vitae and a letter indicating interest and plans for the Division. The deadline for receipt of applications is 2 May 1986.

## Non-Academic

*To obtain further information on the following positions, please contact Personnel Services and Staff Relations, 2-40 Assiniboia Hall, telephone 432-5201. These vacancies cannot be guaranteed beyond 11 April 1986.*

Clerk Typist II, Sociology, (\$1,190-\$1,478)  
Clerk Steno II (Receptionist), Legal Resource Centre, (\$1,190-\$1,478)  
Clerk Typist III (Receptionist), Personnel Services and Staff Relations, (\$1,326-\$1,666)  
Clerk Typist III, Physical Plant, (\$1,326-\$1,666)  
Clerk Steno III (Trust), Pharmacy, (\$1,326-\$1,666)  
Clerk Steno III, Drama, (\$1,326-\$1,666)  
Clerk Steno III (Term), Extension—Public Administration, (\$1,326-\$1,666)  
Medical Steno (Trust), Pediatrics, (\$1,478-\$1,888)  
Secretary, Alumni Affairs, (\$1,478-\$1,888)  
Student Records Processing Clerk II, Dean of Science, (\$1,478-\$1,888)  
Systems Control Clerk II, Personnel Services and Staff Relations, (\$1,478-\$1,888)  
Accounts Clerk, Personnel Services and Staff Relations, (\$1,478-\$1,888)  
Departmental/Executive Secretary (Trust), Muttart Diabetes Research and Training Centre, (\$1,666-\$2,144)  
Departmental/Executive Secretary, Housing and Food Services, (\$1,666-\$2,144)  
Technician I/Technologist I (Trust), Medicine, (\$1,534-\$2,437)

*For vacant Library positions, please contact the Library Personnel Office, Basement, Cameron Library, 432-3339.*

## Advertisements

### Accommodations available

Rent - House, 8932 116 St. Family only. \$750. Call evenings, 439-4207.  
Sale - Charming, older home. University area. Features nice detailed woodwork and windows, brick fireplace, separate dining room, four bedrooms. Treed, south yard. Ask for Pat von Borstel, 436-5250. Spencer's. 437-6540.  
Sale - Condos. One, two bedrooms, central location. Good mortgage. Vendor anxious. Resi Richter, LePage. 483-9432.  
Sale - Laurier. Executive bungalow. 1,900'. Fully developed, two fireplaces, quiet location. \$159,900. Resi Richter, LePage, 483-9432.  
Sale - Contemporary bungalow. 2,250'. Valleyview, completely renovated, gourmet kitchen, family room, jacuzzi, rumpus, games room, pool. Resi Richter, LePage, 483-9432.  
Sale - Glenora. Renovated, upgraded. Split. New kitchen, new bathroom, Park-like garden. \$98,500. Resi Richter, LePage, 483-9432.  
Sale - Valleyview. Large bungalow, like new, fully developed, upgraded, three bedrooms, gourmet kitchen, crescent location. Resi Richter, 483-9432. LePage.  
Sale - Exclusive, best buy, Valleyview. Two-storey, four-bedroom, family room (main), developed basement, formal dining room. Resi Richter, 483-9432. LePage.

For rent - Large, furnished Garneau house. 432-7845.  
Wildland for sale - 80 acres, mixed woodland preserve, adjoining Elk Island Park; lake, creek, beaver, moose, deer, many birds; listen to owls, coyotes year-round, elk bugling. 467-7649 evenings, weekends.  
Rent - Garneau Mews. Beautifully furnished condo. Two bedrooms plus loft, fireplace, five appliances. \$1,100/month. Western Relocation Services Limited. 438-1044.

Sale - Three-bedroom, open-beam bungalow. Laurier Heights. Good location, reduced to \$94,500. Beth Siegel, 482-3831. Resi Richter, 483-9432. Royal LePage, 455-4181.  
Sale - Charming, 2 1/2-storey home. Groat Estate. Totally renovated, minutes to University and downtown. Asking \$157,500. Beth Siegel, 482-3831, 455-4181. Royal LePage.

Sale - Escape from Edmonton. Ghost town in west Kootenays. Heavily treed, very secluded with good year-round access. Near creek and river, close to lakes. \$6,750 for nine lots. 433-7873 evenings.  
Sale - Allendale. Cozy, three-bedroom, semi-bungalow. Large fenced lot, quiet neighborhood. Renovations, must be seen! By owner, no agents please. 435-0254 after 6 p.m.

Rent - 27 June to 27 August. Comfortable, fully furnished house. Pleasant, fenced garden, deck. Windsor Park, one block from campus. \$800/month, reduction for care of pets. Non-smokers. 433-1859.

For sale - By owner, four-bedroom bungalow. Finished basement. Office and workshop. Full and two, half baths. Fireplace, large garden and storage. Duggan. \$98,500. 435-1615.

Sale - Grandview. New listing, four-bedroom, split-level, wet bar, three bathrooms, large kitchen, 2,000 sq. ft. Close to University. Immediate possession. Phone Ray Huot, Royal LePage, 438-5100, 488-8046.

Sublet - Riverview. Large, one-bedroom, furnished apartment. 22 April to 22 June. \$650. 488-8046.

Rent - Blue Quill (opposite Derrick Club). Furnished house, four/five bedrooms, 2 1/2 baths, two fireplaces, large yard, garage. 1 July-31 August 1986. \$600/month plus utilities (negotiable). 439-7311. Monday-Friday, 8 a.m.-4 p.m.

Rent - Ideal summer accommodation, three-bedroom, furnished house. 15-minute walk to University. \$400/month. Non-smokers please. 431-0947.

Rent - Belgravia. Large, four-bedroom home. 2 1/2 baths, study, sunroom, fireplace. Heated, double garage. Furnished. August 1986 to August 1987 (flexible). 437-1138.

Rent - Elegant, four-bedroom home at 105 St. 31 Ave. Family room, developed basement, double garage. \$1,200. 1 June. Marlene Lavallee, 436-5250, 436-3345. Spencer's.

Sale - By owner. Attractive, spacious semi-bungalow. Four bedrooms, 1 1/2 baths, fireplace, patio. Beautiful, big garden. 11455 University Ave. \$115,000. No agents. 436-2584.

Sublet - One bedroom apartment. June-December. \$540. Next to campus. Furnished. 432-0789.

Sale - Lakefront. Wabamun. North shore. Very private beach. 100' frontage. Chris Tenove, 433-5664, 436-5250. Spencer's.



## ASSISTANT PROFESSOR

**Position:**  
Assistant Professor, Liberal Studies Program, Faculty of Extension.

**Date of Appointment:**  
July 1, 1986 - June 30, 1987  
(1 year term)

**Nature of Duties:**  
Direct a wide range of university-level, non-credit general interest courses (languages, music, educational travel), fitness and lifestyle courses, and the Spring Session for Seniors program.

Investigate and assess community needs.

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**Qualifications Required:**  
Ph.D. in humanities or social sciences.

Minimum of three years experience in continuing education programming for adults.  
Specialized training in adult education an asset.

**Salary:**  
\$30,316. - \$43,780.

**To Apply:**  
Forward application, curriculum vitae, and names and addresses of three references to:

**Dr. D. Foth, Dean  
Faculty of Extension  
University of Alberta  
220 Corbett Hall  
Edmonton, Alberta  
T6G 2G4**

**Closing Date for Receipt of Applications:**  
May 15, 1986.

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Rent - July 1986-June 1987. Three-bedroom, garage, fenced, furnished. \$590/month. (413) 465-3740. 9011 92 St.

#### Accommodations wanted

Visiting professor requires three-bedroom accommodation. 1 June-20 July. 432-2740.

Killam Scholar and family require three-four bedroom house, preferably furnished, close to University, for a period of two years, starting 1 September 1986. Contact Robert Carney, 432-3726.

Wife of graduate student seeking sanity for self and family through renting comfortable, lakeside cabin in late August. Attractive location required. Excellent references. Call 437-3774.

Professional woman seeks home to house-sit, immediately. Please call 469-3813 evenings/weekends.

College administrator, family, require three-bedroom house. 1 July or 1 September-15 August 1987. 1-791-0894.

#### Automobiles and others

Sale - 1980 Westphalia V.W. deluxe camper, like new. Only 49,000 holiday kms. \$13,000. 433-1859.

#### Goods for sale

Cash paid for used appliances, 432-0272. Unused, IBM wheel writer 3, typewriter. Good value, \$900. 488-1167.

Good selection of new typewriters from \$239. Mark 9, HUB Mall, 432-7936. Must go! Fridge, \$60. Toyota Celica, 1970, 4-speed, \$600. Volvo, 1972, 4-speed, good condition, \$1,500. Plymouth Horizon, 1981, lady driven, \$2,800. LTD Ford, 1982, propane, \$5,500. 922-5600 anytime.

Children's used bicycles, life jackets, rain jackets. Good quality. 435-4068. Blue Chip Art, 2 Norman Rockwell lithographs, signed and numbered by the artist, 25"x19", all documentation. Valued at \$2,000 American each. The ultimate for the Rockwell collector. 430-6816.

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Typing services, French or English. 459-0234.

Journeyman carpenter. Renovations, concrete, garages, skylights, lino, rugs, drywall taping, painting, finishing, sun decks, landscaping, plumbing, electrical. References. David Richards, 437-0794.

Vista travels, Dr. Ernest Reinhold (director) offers treks in Nepal and tours in India. October-November 1986. For more information, call 433-3533 after 15 May.

Student exchange - summer 1986 or 1987. Junior High age. Contact: Dr. Santiago Molina Garcia; el. Gines Lalana No. 2; 50007, Zaragoza, Espana. P.K's Lawn and Yard Service. Clean up, mowing, trimming flower beds. Call 434-9216 after 5 p.m.

Publication consultant/textform analyst will produce camera-ready pages for your 5-500 page publication. No cost overruns, on-campus references available. Phone 439-8120 weekdays before 10 p.m.

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## Karl Joreskog

**Distinguished Visiting Speaker**  
*from the University of Uppsala*

- **APRIL 24**
- **10:00 - noon, 2:00 - 4:30**
- **L - 3, Humanities Building**

**Two lectures addressing the topic of  
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Equation Modelling (LISREL)"**

*Co-sponsored by the Centre for Systems Research  
(Department of Sociology) and Computing Services*